REMARKS

The present invention allows a transmission unit to resume transmission of the video data in an efficient manner to a reception terminal after temporarily interrupting transmission of the video data with minimal disruption to a viewer of the video data, such as a delayed display and/or distorted images. The present invention will judge a frame, to be transmitted after resuming transmission of the video data, to determine if the judged frame should be transmitted or if the judged frame should be replaced with a substitute I frame. I frames can play independently and solves the problem the judged frame has when referencing a reference frame which was not transmitted.

For example, a material judgment unit determines whether the reference frame of the judged frame has already been transmitted. If it has not been transmitted, then the judged frame is replaced with an I frame. Otherwise, if the reference frame has been transmitted, then the judged frame is transmitted. This ensures that the judged frames are not unnecessarily replaced, but instead replaced when necessary to ensure a smooth playback of the video data. (Pg. 31, ln. 6 – Pg. 33, ln. 10)

The Office Action rejected Claims 1, 11, 13, 14, and 16 under 35 U.S.C. § 103(a) as being obvious over *Satoda* (U.S. Pat. Pub. No. 2002/0147980) in view of *Muller* (U.S. 6,031,574) and *Sugimoto et al.* (U.S. 5,650,829).

Satoda does not teach or suggest

> [W]herein when the transmission unit is to resume transmission of the video data to one of the reception terminals after temporarily interrupting transmission of the video data to the reception terminal, the transmission unit checks whether a reference frame of a frame to be transmitted after resuming transmission of the video data has been transmitted or not, and if the reference frame has not been transmitted, transmits the substitute I frame data to the

reception terminal <u>for the frame for which the reference frame has</u> <u>not been transmitted</u> before resuming transmission of the video data.

In *Satoda*, upon reception of a request for viewing and listing to a program or for changing a program, the frame selection unit 31 first selects an intraframe-coded frame ("I frame") which is coded by the intraframe coding unit 22 as a first frame to be transmitted to the terminal 40. Then, the frame selection unit 31 selects interframe-coded frames which are coded by the interframe coding unit 21 for frames to be subsequently transmitted to the terminal 40. (¶ 0123) Since, the intraframe coding unit outputs intraframe-coded video frames "I" at an interval of, for example, one second, the playback of the video can be delayed for one second. (¶ 0128)

Also, other problems during the switching of videos in *Satoda*, are illustrated below:
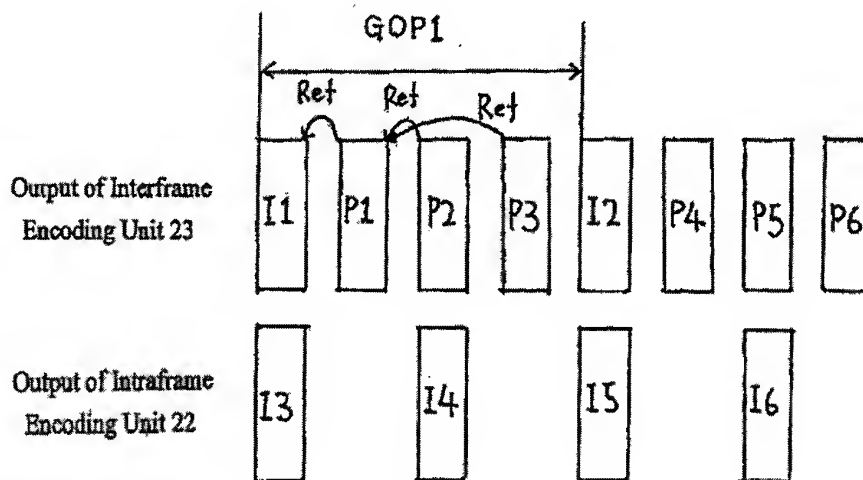
As seen in the illustration above, the interframe encoding unit 23 in *Satoda* outputs an I frame I1 followed by 3 interframe frames P1, P2, and P3 in GOP1. Interframe P1 has a reference frame of I1. Interframe P2 has a reference frame of P1. Interframe P3 has a reference frame of P3. As seen above, intraframe encoding unit 22 outputs an I frame at periodic intervals

such as every one second. In the above illustration, intraframe encoding unit 22 outputs I frame I3 at the time corresponding to I frame I1, and I frame I4 corresponding to the frame P2.

If the video switch occurs immediately prior to the output of I1, the selection unit 31 outputs I frame I3 in place of I frame I1. This is redundant since I frame I1 is already an I frame. Thus, *Satoda* will needlessly expend resources replacing an I frame.

If the video switch occurs after frame P1, but before the frame P2, then the receiver will not receive frame P1. Instead, selection unit 31 outputs I frame I4 in place of frame P2. The replacement of frame P2 is also problematic since frame P3's reference frame is frame P1, and not frame P2. Thus, a receiver will be able to play the frame I4 instead of the frame P2, but the receiver will not be able to play the frame P3 since the frame P3 refers to the frame P1. The user will then experience an interrupted or erroneous video playback during the playback of the frame P3.

Muller and *Sugimoto* do not remedy the deficiencies of *Satoda*.

In contrast, in the present invention, during a switch from an on-demand video to broadcast video, a material judgment unit 152 judges whether to replace the frames of the broadcast video data with substitute I frame data. (Pg. 30, lns. 6 – 18) If the material judgment unit 152 judges that the frame being judged is an I frame, then it is unnecessary to replace the frame with a substitute I frame because the frame and the subsequent frames can be decoded correctly by the user terminal 18. (Pg. 31, lns. 6 – 15) However, if the material judgment unit 152 judges that the frame being judged is a P or B frame, the material judgment unit 152 checks whether the reference frame of the judged frame has been transmitted to the user terminal 18. If the reference frame of the judged frame has been transmitted to the user terminal 18, then the judged frame can be played properly and is not replaced with a substitute I frame. (Pg. 31, ln. 6 -

15) However, if the reference frame of the judged frame has not been transmitted to the user terminal 81, then the judged frame cannot be played properly and is instead replaced with a substitute I frame. (Pg. 32, ln. 22 – Pg. 33, ln. 10)

Thus, in the illustration above, if the switch occurs immediately prior to the frame I1, frame I1 would not be replaced with frame I3 since frame I1 is an I frame. This can conserve resources during the transmission of the broadcast video. Furthermore, if the switch occurs after the frame P1, but before the frame P2, then the frame P2 is replaced with a substitute I frame since the reference frame for frame P2, frame P1, has not been transmitted. Likewise, the frame P3 is replaced with a substitute I frame since the reference frame for frame P3, frame P1, has not been transmitted. Thus, the user is able to play the broadcast video without interruption since the frame P3 is replaced with a substitute I frame.

Applicant submits that any combination of references that must be modified beyond their functions is suggestive of an unintended use of hindsight that may have been utilized to drive the present rejection. This is particularly true for an Examiner who is attempting to provide a diligent effort that only patentable subject matter occurs. The *KSR* Guidelines do not justify such an approach. There is still a requirement for the Examiner to step back from the zeal of the examination process and to appreciate that a Patent Examiner has to wear both hats of advocating a position relative to the prior art while at the same time objectively rendering in a judge-like manner a decision on the patentability of the present claims.

As set forth in MPEP 2142,

> To reach a proper determination under 35 U.S.C. §103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination

whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

All arguments for patentability with respect to Claim 1 are repeated and incorporated herein for Claims 11, 13, and 16.

The Office Action rejected Claims 10, 15, and 17 under 35 U.S.C. § 103(a) as being obvious over *Satoda* in view of *Sugimoto*.

All arguments for patentability with respect to Claim 1 are repeated and incorporated herein for Claims 10 and 17.

The Office Action rejected Claims 2 – 7, 9 and 19 under 35 U.S.C. § 103(a) as being obvious over *Kunkel et al.* (U.S. 7,100,183) in view of *Satoda*, *Muller*, and *Sugimoto*.

All arguments for patentability with respect to Claim 1 are repeated and incorporated herein for Claim 2.

Furthermore, with respect to Claim 2, *Kunkel* does not teach or suggest

> [A] transmission unit transmitting the video data and the substitute I frame data to the plurality of reception terminals, and when the transmission unit is to resume transmission of the video data to one of the reception terminals after temporarily interrupting transmission of the video data to the reception terminal, the transmission unit <u>checks whether a reference frame of a frame to be transmitted after resuming transmission of the video data has been transmitted or not, and if the reference frame has not been transmitted,</u> transmits the substitute I frame data to the reception terminal <u>for the frame for which the reference frame has not been transmitted</u> before resuming transmission of the video data.

Kunkel discloses that I-frames are continuously sent at the beginning and end of each targeted advertisement. (Col. 7, lns. 10 – 17) Since *Kunkel* continuously sends I frames, it does not check to determine whether a reference frame of the frame to be transmitted has already been transmitted or not. Thus, *Kunkel* will unnecessarily transmit I frames.

In contrast, in the present invention, a material judgment unit 152 judges whether to replace the frames of the broadcast video data with substitute I frame data. (Pg. 30, lns. 6 – 18) If the material judgment unit 152 judges that the frame being judged is a P or B frame, the material judgment unit 152 determines if the reference frame of the judged frame has been transmitted to the user terminal 18. If the reference frame of the judged frame has been transmitted to the user terminal 18, judged frame is not replaced with a substitute I frame. (Pg. 31, ln. 6 -15) However, if the reference frame of the judged frame has not been transmitted to the user terminal 81, then the judged frame cannot be played properly and is instead replaced with a substitute I frame. (Pg. 32, ln. 22 – Pg. 33, ln. 10) This improves the efficiency of resource utilization during the switching of videos.

The Office Action rejected Claim 18 as being obvious over *Satoda* in view of *Muller*, *Kunkel*, and *Satoda*. All arguments for patentability with respect to Claims 1 and 2 are repeated and incorporated herein for Claim 18.

The Office Action rejected Claim 20 as being obvious over *Satoda* in view of *Muller*, *Sporer* (U.S. Pat. Pub. No. 2002/0147980) and *Sugimoto*. All arguments for patentability with respect to Claims 1 and 2 are repeated and incorporated herein for Claim 20.

With respect to Claim 21, *Satoda*, *Muller*, *Sporer*, *Sugimoto*, or *Kunkel* do not disclose the use of "a frame judgment unit analyzing the interframe frame data to obtain frame serial

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numbers." There is no indication that any of the references singularly or in combination with each other discloses obtaining frame serial numbers from the interframe frame data.

In contrast, in the present invention, the frame judgment unit 154 analyzes attribute information of each piece of frame data that composes the video data, to obtain the frame type and the frame serial number. (Pg. 28, lns. 13 – 20).

With respect to Claim 22, *Satoda*, *Muller*, *Sporer*, *Sugimoto*, or *Kunkel* do not recite "wherein the transmission unit uses the frame serial numbers to determine whether a reference frame of a frame to be transmitted after resuming transmission of the video data has been transmitted or not." There is no indication that any of the references singularly or in combination with each other discloses using the frame serial numbers to determine whether a reference frame of a frame to be transmitted has been transmitted or not.

In contrast, in the present invention, the frame serial number is used to judge whether or not it is necessary to output substitute I frame data. (Pg. 28, ln. 22 – Pg. 29, ln. 3; Pg. 31, ln. 16 – Pg. 33, ln. 10)
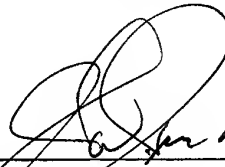
Dependent Claims 3 – 7, 9, and 18 - 22 depend from and further define Independent Claims 1 and 2 and are thus allowable, too.

It is believed that the case is now in condition for allowance and an early notification of the same is requested.

If the Examiner believes that a telephone interview will assist in the prosecution of this case, the undersigned attorney can be reached at the listed telephone number.

Very truly yours,

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